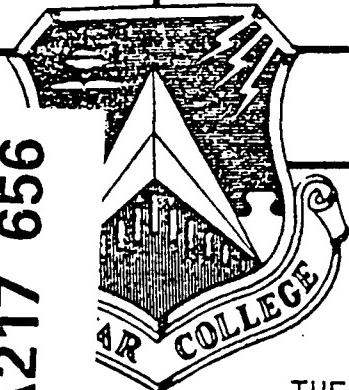


DTIC FILE COPY

(2)



AIR WAR COLLEGE

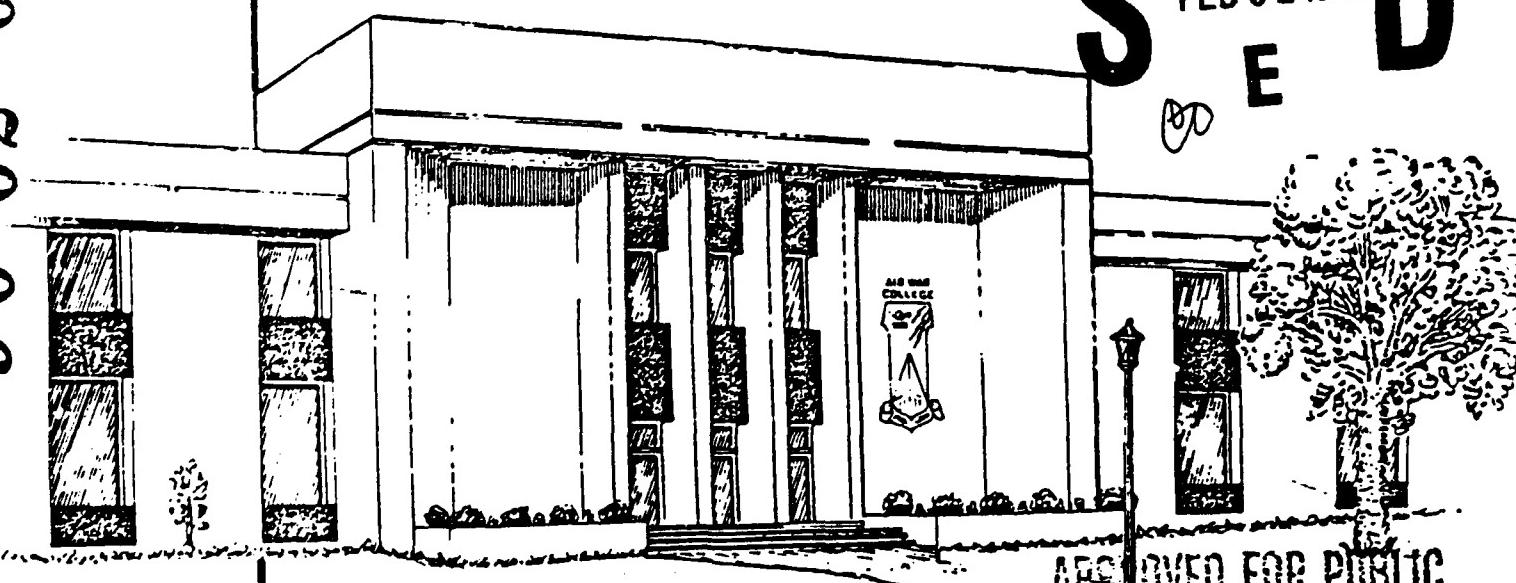
RESEARCH REPORT

AD-A217 656

THE AIR FORCE RESERVE PILOT--A CRITICAL RESOURCE

LT COL LEE H. GIDNEY, USAFR

1989



AIR UNIVERSITY
UNITED STATES AIR FORCE
MAXWELL AIR FORCE BASE, ALABAMA

APPROVED FOR PUBLIC
RELEASE, DISTRIBUTION,
UNLIMITED

AIR WAR COLLEGE
AIR UNIVERSITY

THE AIR FORCE RESERVE PILOT--A CRITICAL RESOURCE

by

Lee H. Gidney
Lieutenant Colonel, USAFR

A DEFENSE ANALYTICAL STUDY SUBMITTED TO THE FACULTY
IN
FULFILLMENT OF THE CURRICULUM
REQUIREMENT

Advisor: Colonel Wayne N. Nelson

MAXWELL AIR FORCE BASE, ALABAMA

March 1989

DISCLAIMER

This study represents the views of the author and does not necessarily reflect the official opinion of the Air War college or the Department of the Air Force. In accordance with Air Force Regulation 110-8, it is not copyrighted but is the property of the United States government.

Loan copies of this document may be obtained through the interlibrary loan desk of Air University Library, Maxwell Air Force Base, Alabama 36112-5564 (Telephone: [205] 293-7223 or AUTOVON 875-7223).

EXECUTIVE SUMMARY

TITLE: The Air Force Reserve Pilot--A Critical Resource

AUTHOR: Lee H. Gidney, Lieutenant Colonel, USAFR

This study reviews the importance of reserve forces to the overall effectiveness of military capability and then focuses on the need for a fully manned and capable pilot force in the Air Force Reserve (AFRES). The current AFRES pilot force structure is examined and the conclusion is drawn that an extremely high rate of turnover due to retirements and reassessments is likely in the next five to ten years. Next, AFRES's ability to recruit and retain pilots in the same time frame is discussed relative to its main competitors for Air Force pilots, the regular Air Force and commercial aviation. The conclusion suggests that recruiting and retention may suffer in the future with a concomitant drop in pilot manning and goes on to suggest several potential steps to remedy the situation.



Accession For	
NTIS GRA&I	<input checked="" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification _____	
By _____	
Distribution/ _____	
Availability Codes	
Dist	Avail and/or Special
A-1	

BIOGRAPHICAL SKETCH

Lieutenant Colonel Lee H. Gidney is a command pilot assigned to the 301st Military Airlift Squadron (Reserve) (Associate), Travis AFB, CA. He served on active duty from 1970 until 1979 when he joined the Air Force Reserve immediately following his separation from the regular Air Force. He has flown the C-5 Galaxy since 1974. From 1980 to 1985 he served as an Air Reserve Technician with the 349th Military Airlift Wing (Reserve) (Associate). His duties included Assistant Squadron Operations Officer, Chief of Wing C-5 Standardization/Evaluation, Squadron Operations Officer and Wing Assistant Deputy Commander of Operations. He has had a continuing interest in pilot motivation and retention since before his decision to separate from the regular Air Force. He graduated from the Marine Corp Command and Staff College correspondence course in 1982 and the Air Command and Staff College Seminar program in 1983. He is a graduate of the Air War College, class of 1989. In his civilian career he is a Flight Officer with United Airlines.

TABLE OF CONTENTS

CHAPTER	PAGE
DISCLAIMER	ii
EXECUTIVE SUMMARY	iii
BIOGRAPHICAL SKETCH	iv
I INTRODUCTION	1
II BACKGROUND	4
III CURRENT AFRES PILOT FORCE	9
IV AFRES PILOT SOURCES	13
V COMPETITORS FOR THE AIR FORCE PILOT	17
VI WHY FLY FOR THE AIR FORCE RESERVE?	26
VII WHAT CAN WE DO?	35
VIII CONCLUSIONS	43
LIST OF REFERENCES	45

CHAPTER I

INTRODUCTION

Modern military air power is dependent upon an almost infinite array of intricately interdependent requirements if it is to succeed. These range from the most highly technical hardware refinements produced by the aerospace industry, to complex computer software designed to carry out tasks that could not possibly be accomplished by a man, to providing for the housing and feeding of large numbers of personnel. However, a common thread runs through the history of aviation and, for the foreseeable future, it appears it will continue to be a critical part of its fabric. It is the need for highly skilled and committed pilots to fly the machines that eventually perform the crux of the aerial mission. Without pilots to man its aircraft, no current air force can successfully "fly and fight." Today, the US Air Force finds itself in the throes of a pilot retention crisis that may well become the worst of its history. A great deal of thought and argument has been invested in attempting to find a solution for this serious problem.(6:54) Yet another air force is also dependent upon the military aviator to perform its mission, the US Air Force Reserve. Though the casual observer may believe a shortage of pilots in the reserve forces is not nearly as critical as a similar circumstance in the regular Air Force, the concept of Total Force makes the

Air Force Reserve (AFRES) an equal partner in the maintenance of our national security. Thus, any decrease in its readiness directly affects the overall ability of the United States military to perform its mission. While AFRES does not find itself immediately threatened with a shortage of pilots, it too is a competitor for the trained military aviator and must be conscious of the dynamics that can and will affect its pilot force. An adverse trend in AFRES pilot manning would not be the first experience of this type for the command and could be potentially difficult to resolve. (2:46)

Within this context, this study will briefly examine the necessity for a strong and fully manned Air Force Reserve as well as previous pilot shortages. We will then look at the current structure of the AFRES pilot force and the possible changes which might occur within the next five to ten years. Following this we will turn our attention to AFRES's potential to access pilots for the future as one of three competitors for the Air Force trained pilot. Finally, possible enhancements that might successfully be employed by AFRES to insure it will be able to meet its pilot recruitment and retention goals will be discussed.

The careful reader will no doubt have noticed that to this point no mention has been made of the other member of the Air Reserve Component, the Air National Guard (ANG). This in no way is meant to slight the importance of this

significant organization. It too plays a critical part in the overall capability of the total Air Force. However, while many of the dynamics at work in the manning of AFRES have an equal affect on the ANG, there are also a number of differences that must be taken into account. For simplicity's sake this examination will total Air Force. However, while many of the dynamics at work in the manning of AFRES have an equal affect on the ANG, there are also a number of differences that must be taken into account. For simplicity's sake this examination will focus exclusively on AFRES pilot manning. Many of the conclusions reached may certainly be applicable to the ANG but must be interpreted in the context of its force structure, recruiting, training and retention programs.

CHAPTER II

BACKGROUND

The historical importance of reserve forces is as long as that of the American military itself. Captain Miles Standish is often thought of as the first citizen soldier and as such was following a tradition begun in England.(21:3) During the Revolutionary War the militia of the various colonies were the basis for the fighting forces of the fledgling country. To quote Whisker in The Citizen Soldier and United States Military Policy, "...the real protection of the community rested with the citizen-soldier: these men represented the community defending itself."(41:10) To move rapidly ahead through history it was in 1903 that the federal government, recognizing the vital importance of reserve forces, enacted the Dick Act of that year which laid the ground work for the federalization of the Army National Guard and the US Army Reserve.(18:124) The Air Force Reserve traces its beginning to the passage of the National Defense Act of 1916 which established the Aviation Section of the Signal Reserve Corps.(18:124) Thus begins a long history of involvement by reserve airmen in every succeeding conflict involving US military forces. In 1917, the 1st Aero Reserve Squadron was mobilized for service in WWI.(18:124) Since then reservists have distinguished themselves in WWII, the Korean conflict, the Berlin crisis, the Cuban missile crisis,

the Dominican Republic, Vietnam, the 1973 Arab-Israeli War and, most recently, the attack on Libya and the Grenada rescue operation.(18:125,126) It is important to note that reservists were not recalled to active duty in every one of these operations. Quite often reserve participation was on a volunteer basis, and, in many instances, reserve assumption of responsibilities other than those directly involved in the crisis at hand have freed active forces for other taskings.

In the area of airlift, where the largest concentration of AFRES participation is located, the importance of reserve capabilities is truly astounding. With the recent activation of unit equipped squadrons flying the C-5 and C-141, more than fifty percent of the strategic airlift aircrews available to the Military Airlift Command are reservists.(35:13) Twenty-five percent of C-130 crews and aircraft available for intratheater airlift come from the Reserve.(37:68) The future sees this role continuing with AFRES providing half and possibly more of the pilots required to man the C-17, MAC's newest airlifter.(28:-) Fifty percent of the Strategic Air Command's KC-10 crews are members of Associate Reserve wings that operate the aircraft in concert with their active duty counterparts.(35:13) Other roles that find significant reserve participation include rescue/recovery, tactical fighters, weather reconnaissance, and special operations.(37:68) Each of these missions is

dependent for its success on highly skilled and motivated pilots just as is the regular Air Force.

Indeed, the current philosophy of Total Force within the Department of Defense casts the reserve components of the services as equal partners in the preservation of national security. Former President Ronald Reagan stated that reserve forces:

...perform important missions and support functions on a daily basis. Their priority for manning, training and equipment modernization is not based on their peacetime status as forces 'in reserve,' but on the basis of their direct integration into the nation's operational plans and missions. In many cases, the sequence of deployment in the event of conflict would place reserve component units side-by-side and sometimes ahead of active duty forces. (35:xxi)

Air Force Regulation 45-1 entitled "Purpose, Policy, and Responsibilities for Air National Guard and Air Force Reserve" states that not only will the reserve forces "be the initial and primary source of augmentation...in an emergency" but that they will "also perform peacetime missions as an adjunct to, or corollary of, training." (34:2) In fact we need not look too far to find Air Force reservists helping to accomplish the daily mission of the Air Force on many fronts. On any given day approximately one third of MAC C-141s and C-5s engaged in overseas missions are operated by reserve crews. (31:-) Reserve KC-135 crews are on alert 24 hours a day, 365 days a year in support of the Strategic Air Command's commitment to the deterrence of conflict. (37:62)

In Panama, C-130s operated by reserve crews provide continuous airlift capability to the US Southern Command thru the Volant Oak deployment.(37:62) These examples certainly do not exhaust the list. Realizing the importance of the Air Force Reserve, it is easy to then understand the impact that a reduction in its capability through inadequate pilot manning would have for the overall capability of the US Air Force. The Reserve Forces Policy Board in its annual report for the Secretary of Defense in 1987 stated:

With the guard and reserves being employed on a battlefield simultaneously with active component forces, we must insure the strength of the total force. There can be no weak links in the chain.(35:xxxiv) (Emphasis added.)

Do we have a "weak link?" Definitely no. But that does not preclude one developing, and we need not look too far into the past to find a time when pilot manning in AFRES was a critical issue. In the middle to late 60s, AFRES found itself able to fill only 75 to 80 percent of its pilot requirements.(27:16) Low numbers of pilots separating from active duty found service in AFRES an attractive opportunity. In fact, from 1964 thru mid 1967, of the more than 2000 separating regular Air Force pilots only 147 elected to join AFRES.(27:4) It was this critical manning situation, coupled with a high number of potential retirements in the near future, that prompted AFRES (at that time the Continental Air Command, CONAC) to lobby for access to Undergraduate Pilot

Training (UPT) as a source of pilots. This program was instituted in late 1969.(22:Yr.1970) Initial success in UPT production coupled with increased accessions from separating active duty pilots enabled AFRES to rectify its pilot manning deficiencies. Since that time, the pilot manning picture in AFRES has been generally good to excellent. However, the potential for a disturbing change in this situation may lie just over the horizon. In order to fully comprehend what may lie ahead, it is necessary to analyze the current structure of the AFRES pilot force and to then examine AFRES's ability to continue to recruit and retain sufficient pilots to enable it to fulfill its increasing role in national defense.

CHAPTER III

CURRENT AFRES PILOT FORCE

As noted earlier, the total number of AFRES pilots indicate that no problem currently exists in the filling of reserve cockpits. Indeed, most personnel managers would envy the statistics. At the end of FY88, against a total pilot requirement of 2948, AFRES had 3001 assigned pilots and some units indicated they had waiting lists of qualified applicants.(13:-) Also, the retention rate has been exceedingly good with losses over the last three years averaging only 7.5 percent.(13:-) However, a closer look at the force structure provides some evidence that the future holds the portend for large change. Over one-third of the force will be eligible for retirement in the next five years.(13:-) This factor alone should cause managers to think carefully about future accessions. Another factor will also come into play. Figure 1 gives a breakdown of pilot authorizations compared to current pilot manning by grade. It is readily apparent that AFRES has an extremely senior pilot force and this fact will complicate its future force stability. It is significant to note that normal promotion to O-4 in AFRES occurs at the 14-year point, thus, the vast majority of officers in this grade or higher generally meet retirement eligibility criteria six years after promotion. While the decision to retire is usually considered to be a

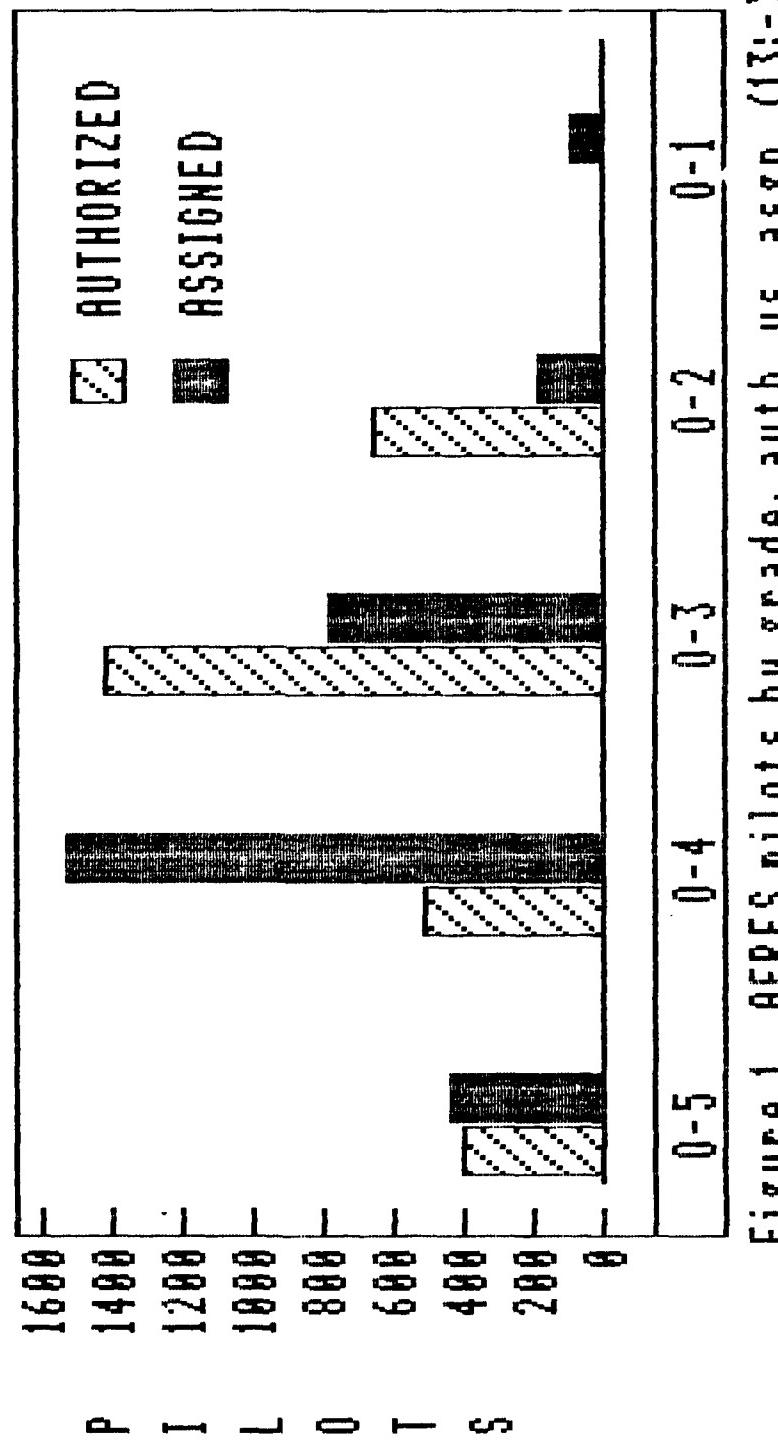


Figure 1. AFRES pilots by grade, auth. vs. assign. (13:-)

voluntary choice by the individual concerned, the increasing seniority of the current pilot force will cause AFRES managers to make difficult decisions concerning overgrade waivers. It is important to note here that the grade structure of AFRES flying units closely parallels that of equivalent regular Air Force units. This insures that in the event of mobilization integration of AFRES units into the regular force would be easily accomplished.(31:-) However, it does not recognize that the vast bulk of AFRES pilots have prior active service and are normally O-3s when joining the Reserve. This forces the use of overgrade waivers to compensate for the more generally senior AFRES grade structure. While current guidance allows waivers in flying units to be granted at the wing level,(1:10,11) double overgrades, i.e. an O-5 assigned to an O-3 position, are generally discouraged.(31:-) This reluctance is not inappropriate in that unrestricted continuation of officers in overgrade status could result in limiting promotion opportunities for less senior officers with a concomitant adverse impact on retention. What this implies is that even if officers who become eligible for retirement in the near future desired to continue their reserve affiliation, the current grade authorizations and attitudes concerning overgrade waivers would force a portion of these officers to

accept, as a minimum, reassignment to other non-flying duties.

All of this, taken in total, indicates that over the next five to ten years AFRES will have a significant need to access a high number of new pilots. In addition, we will see later in this discussion that there are forces at play in the aviation industry that could adversely impact AFRES retention of mid-career pilots, thus, further eroding the stability of its pilot force. Another area of great concern to the highest levels of AFRES management is the recruitment and retention of pilots to fill its full time Air Reserve Technician positions.(13:-; 10:-) Although the difficulties which have surrounded this program are of such a magnitude to preclude their examination in the current discussion, it is sufficient to say that continued shortages in pilot manning in this area would only compound any future shortfalls which might arise in the pilot force.

In conclusion, it appears likely the next decade may very well produce a large turnover in the AFRES pilot force. The question then becomes whether or not AFRES is prepared to respond effectively to counter this instability.

CHAPTER IV

AFRES PILOT SOURCES

At the current time, AFRES has two sources available for the acquisition of pilots. The most heavily used source is that of previous active duty Air Force pilots. Although we refer specifically to "Air Force" pilots, we should note that a small number of pilots from other services who meet Air Force requirements for training and experience are accepted into the AFRES and have their commissions transferred. However, the difficulty in processing these individuals and the limited numbers who seek to join AFRES have generally kept this number extremely small.(31:-) The ability of AFRES to effectively make use of the pool of separating Air Force pilots is dependent on two variables. One is that a sufficient number of pilots elect to separate from active service and, two, an adequate number of those who leave active duty decide to continue their service with a reserve flying unit. With active duty pilot losses approaching all time high levels it would appear that AFRES would be in an excellent position to capitalize on these resources in order to maintain 100 percent pilot manning. The current situation indicates that AFRES is able to enjoy excellent success in recruiting these pilots with approximately 20 percent of those separating voluntarily joining the Reserve over the last seven years.(13:-)

However, as was mentioned earlier, there is a historical precedent that would indicate this number could drop considerably, and forces at work in the "pilot marketplace" might very well limit this source of pilots as well as affect present AFRES pilot's intentions to continue Reserve participation. It is worth noting here that a pilot who separates from active duty after completing his or her service obligation incurs no further obligation upon joining AFRES and may discontinue their Reserve participation at any time and, in point of fact, with very little notice. Those forces at work in the "pilot marketplace" include measures undertaken by the regular Air Force to increase their pilot retention as well as competitive pressure from commercial aviation.

The second source of pilots for AFRES is direct input to Air Force Undergraduate Pilot Training, UPT. As noted earlier, this program was begun in response to a previous AFRES pilot shortfall. AFRES implementation of UPT training currently requires that candidates meet the same eligibility requirements as regular Air Force applicants. Prior to attending UPT, candidates must complete all the requirements and training necessary and receive a commission in the Air Force, and must then meet the same requirements for entry into UPT as their active duty counterparts.(11:-) AFRES UPT production for the last several years has remained relatively

constant at approximately 50 pilots per year.(13:-) However, in the early stages of the program annual production quotas as high as 150 for AFRES were authorized with actual production peaking at 138 in FY1972.(22:Yr.73) Over the last several years, the limiting factor in AFRES UPT production appears to have been the lack of sufficient qualified candidates.(22:Yrs.81-86) This shortfall has limited the effectiveness of this important program in balancing the AFRES pilot force.

An interesting perception of the reserve forces UPT program came to light during 1988 when active duty forces required an increase in pilot training. Suggestions were made that quotas initially dedicated to reserve forces be reallocated to meet regular USAF needs. This suggestion was resisted by AFRES. However, changes made by Air Training Command in security clearance requirements made several AFRES candidates ineligible to attend scheduled class dates and these dates were subsequently released for use by the regular Air Force.(31:-) The significance of this event is that it indicates a perception that the UPT pipeline is less important to AFRES than is necessarily the case.

While these are currently the only sources used by AFRES, they are not the only ones possible and they could be modified. The latter suggestion refers specifically to a change in requirements for attendance at UPT to broaden the

recruiting base and thereby increase production.

Commissioning requirements could be changed, most notably in the requirement for four-year college degrees. Additionally, physical requirements could be modified. Lastly, changes in the UPT course to shorten it, thereby making it less disruptive to other career plans, have been discussed previously.(27:41) While all of these changes might make it easier for AFRES to select and produce pilots, this author believes they would also run counter to the policy of "Total Force." This policy embodies the belief that Reserve forces must be just as capable and operate the same equipment to the same standards as the regular USAF.

Another source of pilots might be through the accession of pilots whose civilian experience would qualify them to operate primarily transport type aircraft without attending UPT. During WWII pilots were commissioned under this criteria and were referred to as "Service Pilots."(2:24) While the exigencies of war might argue for this method of acquiring pilots, the same arguments against modification of UPT requirements discussed above are equally relevant here.

In short, the only two currently practical sources of pilots for AFRES are active duty separatees and direct inputs to the existing USAF UPT program.

CHAPTER V

COMPETITORS FOR THE AIR FORCE PILOT

In this chapter we will discuss the efforts to build stable pilot forces of AFRES's two main competitors for the Air Force pilot. Our focus is primarily on those pilots who have or are serving on active duty although the commercial airlines must be acknowledged as competitors for AFRES UPT graduates. It is important to note that each AFRES unit does in fact "recruit" its pilots. The lowest organizational level, generally the squadron, is responsible for locating and accessing its own pilots from the available resources. There is no single office or directorate that assigns available, interested pilots to areas of need. In the past, the high interest level of separating active duty pilots in joining AFRES has resulted in most units having waiting lists of pilots who are qualified in the aircraft the unit operates. A simple selection process to ascertain those individuals who could contribute the most to the unit was all that was needed to maintain full manning. The recruiting process was generally passive in nature. If, in fact, AFRES units will be forced to compete for their pilots, a much more active role will be forced upon them. It may also be that higher organizational levels such as the group or wing could be effective in aiding the recruiting process.

It is important that we view AFRES as one of three organizations that has a need for the Air Force pilot because we can then accurately assess its ability to attract and retain sufficient numbers of pilots to enable it to maintain its combat readiness. The two competitors AFRES faces are the regular Air Force and the commercial airlines. We will focus first on the efforts of the regular Air Force to maintain the stability of its pilot force.

The active USAF "pays the freight" for the training of all Air Force pilots, AFRES's included, due to the specialized nature of its flying and, therefore, has the largest vested interest in retaining them. Even the USAF's transport pilots are qualified in tasks such as aerial refueling and tactical operations that have no direct equivalent in the civilian world. Because of the tremendous cost involved in training its pilots, and the need to have a stable force meeting prescribed experience levels, retention of pilots once fully trained is an important matter to the Air Force.(6:50; 16:15) However, the last several years have seen the development of a crisis which may surpass any before in the area of pilot retention. The desired retention rate of pilots completing their active duty service commitments for the Air Force is approximately 62 percent while the actual rate has been substantially lower in nearly every category of piloting with helicopters being the notable

exception.(39:109,110) In strategic airlift, the type of flying most closely related to commercial airline operations, the retention rate has dipped as low as 29 percent.(39:110) This exodus of pilots is directly tied by the Air Force to the ready availability of careers in commercial aviation.(9:VI-22; 39:109) As noted earlier, it would seem apparent that such a large outflow of pilots from the active force would guarantee a ready supply of pilots for AFRES. This has been true for the last several years. However, because of the tremendous negative impact of this pilot retention problem, the Air Force is beginning to implement several programs to rectify the situation.

The solution which has attracted the most attention is the pilot bonus. Under the provisions of this plan the Air Force will now pay an annual bonus of up to \$12,000 to a pilot who agrees to continued active service following his initial commitment through a total of 14 years. Total payments could exceed \$80,000 during a pilot's career.(4:3) In addition to this program, which is in effect at the current time, the Air Force, in a special report to Congress, has asked for permission to increase the bonus to \$20,000 and extend the length of payments to the eighteenth year if retention rates fail to improve sufficiently under the current guidelines.(15:14) The reasoning behind this bonus plan lies in the belief that the primary motivation of pilots

leaving the active force is the attraction of much higher paying careers in civil aviation.(14:6; 39:110) USAF surveys of separating pilots have indicated that the bonus program will have a beneficial impact on increasing retention.(16:14) This idea, that pilots are economically motivated, is not a surprise nor is it new. DeJuan Cromer and Mark R. Julicher, in research done at Wright-Patterson AFB in 1982, concluded that:

The results lend credence to the researchers assertion of the pilot as an economic being who bases career decisions on various direct and indirect economic influences.(8:67)

It is also interesting to note that in 1964 a projected shortage of qualified pilots for the commercial airlines was attributed in part to low wages that failed to attract former Air Force pilots.(29:32) Just how effective the bonus will be remains to be seen.

Another idea instituted by the Air Force is the increasing of the service commitment following the completion of pilot training. During the mid 60's the commitment after training was four years of service. It has risen gradually since then. Pilots who will be eligible to separate from the service in the early 1990's will normally have approximately eight years of service. Beginning in the summer of 1988, the commitment for pilots following completion of flying training was increased to eight years.(32:93) This means the average officer electing to separate from the Air Force will have

completed nearly half of the service necessary to qualify for retirement at the 20-year point with entitlement to a substantial annuity. The obvious goal is to attract pilots to remain for a full career. This fact, in concert with the new willingness of the large commercial airlines to hire pilots in their mid to late 40's, could bring about a significant change in retention.(40:83)

Beyond these direct changes, the Air Force has been pursuing policies to enhance the quality of life for its pilots. Reductions in administrative assignments, career rewards based on performance in the cockpit and an overall recognition of the importance of professional aviators in the military are all designed to stem the flow of an expensive resource.(6:54)

In short, given the seriousness of the pilot retention problem in the regular Air Force, it is not improbable that successful efforts will be made to remedy the situation. For AFRES, that means its primary source of pilots may be substantially reduced in the future.

AFRES's other competitor for the Air Force pilot is civil aviation or, in more general terms, the airlines. Those who doubt that the airlines are a significant competitor should realize that from 1984 to 1987 the percentage of AFRES pilots employed by commercial airlines remained relatively constant at 36 to 39 percent. During

1988, this figure increased significantly to 46 percent. Additionally, there are some airlift units where this figure exceeds 70 percent.(13:-) It is reasonable to expect that these percentages will increase in the future as the ensuing discussion will suggest.

As noted earlier, the primary influence in the dramatic increase in separations from the active Air Force is the ready availability of careers with the commercial airlines. What is significant about this demand for pilots is that it may well be at an all time high level and is forecast to remain so for the next decade and perhaps longer.(9:VI-22) This unprecedented requirement is the result of expansion and a retirement hump within the existing population of airline pilots.(39:109,110) The scale of the demand is almost overwhelming. Since 1984 the average number of pilots hired by US airlines averaged between 7,000 and 8,000 per year.(40:84) This number is over six times the number of pilots hired during most years since the end of WWII.(23:96) More importantly, it appears this trend will continue beyond the 1990's. Kit Darby, vice president of marketing for the Future Aviation Professionals of America (FAPA), indicates the current level of hiring should continue "for many years to come."(23:96) Other conservative estimates indicate that commercial air traffic will have doubled by the end of this century and tripled within the

next twenty years.(3:649) The lowering of entry requirements for new-hire pilots and the increased numbers of pilots without prior military experience who are being selected underscore the extent of this demand.(25:1) A most significant change in hiring practices is the willingness of the airlines to hire pilots at older ages than in the past.(32:93; 40:83) Where 30-32 years was previously an unwritten maximum new hire age, pilots in their 40s and even 50s are now finding the market open to them. Lessening of physical requirements, primarily the requirement for 20/20 vision, also is an acknowledgement of the limited numbers of trained pilots available.(40:84) Demand is so high, in fact, that some airlines are considering the implementation of "zero time" training programs for candidates who have no previous experience.(33:121; 40:84)

Two other current trends could have a dramatic impact on AFRES recruiting and retention. The first is the rapid advancement in position of pilots within the airline industry.(38:140) By this is meant the progress from flight engineer to co-pilot to captain. While pilots hired in the 1960s and 70s frequently spent considerable time as flight engineers, some as long as 10 to 15 years, and did not expect to attain promotion to captain until well after 20 years of employment, it is not at all unusual now to find pilots in their second or third year of employment flying as co-pilots

with expectations of upgrading to captain in five to ten years. This rapid advancement can be coupled with an industry trend toward aircraft that have no flight engineer to produce a situation where pilots will spend very little of their time with the airlines in the flight engineer position. The importance of this will be seen in the ensuing discussion of AFRES's drawing points for pilots.

Another issue currently making an airline career attractive is the reduced possibility of furloughs. A fact of life for most airline pilots during the 1960s and 70s was the periodic threat of furlough. As recently as 1980, large numbers of pilots at major US airlines were displaced from the work roles of their companies.(26:43) However, the current high demand and forecast for continued expansion of air travel make the chances of future layoffs appear to be slim.

Finally, it appears the financial incentive for pursuing a career with the airlines is also growing. This would be expected in a situation where there is such a tremendous demand for pilots. The trends toward pay reductions and "B scale" pay rates, where newly hired employees are paid less than those with established seniority, appear to be reversing.(26:45,46; 40:84) Companies forced to compete for the limited resource of

highly trained pilots have found it necessary to make their offerings more lucrative.

All of these trends in the airline industry will continue to make it an extremely attractive alternative for the professional pilot. Some of them will compete directly with the more obvious attractions that AFRES has been able to offer the former active duty pilot. We shall turn our focus to this area next.

CHAPTER VI

WHY FLY FOR THE AIR FORCE RESERVE?

Given this dramatic increase in demand for trained pilots, how can AFRES compete? At this point, it is important to remember that the Air Force pilot who has separated from active duty to pursue a career with the airlines can simultaneously continue his affiliation with the military through AFRES. In that respect AFRES does not have to join in the "winner take all" contest that exists between the regular Air Force and the airlines. However, the demands placed on the AFRES pilot's time and energy are not inconsequential. Current AFRES headquarters figures indicate the average AFRES pilot participates over 90 days per year with his or her unit.(10:-) Put in other terms, we are discussing an individual who devotes more than one out of every four days to a second vocation. To the reader unfamiliar with the Reserve program this figure may seem quite high. However, it must be remembered that Reserve pilots maintain the same currency and qualification levels as their full time regular Air Force counterparts. In addition to the ground and flying training requirements, an AFRES flying unit has the same administrative and collateral functions as a regular Air Force organization. Thus, we arrive at the high participation levels noted.

In order to sustain that type of effort, individuals must perceive some reward, monetary or otherwise. Although no formal data is available to detail the motivations of typical AFRES pilots, this author, having served ten years in the largest airlift wing in AFRES, believes five basic incentives are readily apparent.

The first, and most obvious, attraction is additional income. Assuming the participation rate noted above, the average reservist will gross nearly one-fourth of the salary he or she would have been entitled to if still on active duty. This substantial amount of money can be quite attractive and, indeed, during the first year or two of an airline career, when salaries are low, can be very important to the pilot's overall financial planning. However, as the pilot's career progresses, the corresponding salary increases will diminish the relative value of the income earned at the reserve unit. With the rapid advances noted earlier becoming the norm in the airline industry today, pilots can find themselves in extremely well paying positions at a much earlier time in their careers than in previous years. This lack of continuing financial motivation could be an important factor in a pilot's decision to maintain or discontinue his or her affiliation with AFRES beyond the first several years after separation from active duty.

Secondly, there is an obvious incentive in the opportunity to continue to fly military aircraft. This attraction is most apparent in those types of military flying not duplicated in the civil sector. The tactical fighter community and those missions involving special operations that are unique to only the military would most benefit by this attraction. Those AFRES units whose primary flying mission is purely airlift may not be able to capitalize on this incentive. A less apparent point of view in assessing this motivation must recognize that, up until the present time, most pilots who elected to pursue careers with major airlines did not actually "fly" for quite some time after being hired. As noted earlier, ten years or more as a flight engineer was not an unusual situation in the industry. Given this circumstance, the ability to maintain one's flying skills during that time could be a significant attraction. The coincidence of rapid advancement and the shift to two pilot aircraft throughout the commercial aviation industry means young pilots will no longer be motivated by the opportunity to maintain their flying skills while awaiting promotion to a "window seat." While the attraction of those Air Force missions noted above that are not duplicated in civilian life will still entice many pilots, it is important to note that within AFRES nearly 80 percent of its pilots are involved in the airlift mission.(13:-) Just as the ability

of the regular Air Force to retain pilots is highest in the fighter world and lowest in the airlift community, it is not unreasonable to expect AFRES to experience the same trend.

The next apparent motivation includes retirement and the ancillary benefits attached to reserve participation. The attraction in this instance is quite similar to the financial spur discussed earlier. However, as the average prior service of separating active duty pilots increases due to increased commitments, the potential for highlighting this aspect of a reserve career grows. The largest difficulty in using this aspect of reserve affiliation to attract and retain career pilots is the length of time that must pass prior to the individual realizing any actual benefit. If a pilot were to separate from active duty with eight years total service at the age of 30, he or she would require 12 additional years of service with AFRES followed by the passing of another 18 years before any retirement benefits would be received at age 60. However, these benefits can still be a significant attraction.

Next is a factor not often considered but still a very real one. The career airline pilot/reservist refers to it as "furlough insurance." Few and far between are the airline pilots hired before 1980 who have not had their careers interrupted by a lay-off. During these periods of unemployment, the reserve pilot scheduler has all the

resources he could possibly imagine. While not a princely existence, employment as a "reserve bum" has always had a certain dignity within the reserve family. This ability to earn sufficient income while still plying ones chosen trade and awaiting recall to an airline career has been a strong motivator for numerous reserve pilots. Once again, though, we must note that in the current aviation market the threat of furlough has been substantially reduced. While most pilots are definitely cognizant of this possibility, it is certainly not the factor that it was previously.

The last motivation to be discussed is the most difficult to characterize or quantify. Simply said, it is the desire to serve. There is no doubt in the authors mind that within many pilots who choose to continue their military careers in concert with their civilian endeavors there is a sense of obligation and dedication. All material motivations aside, it is not unreasonable to believe that an individual who has devoted six to ten years to the service of his country in the learning and practicing of a highly demanding skill would have a continuing sense of commitment. But, lest we rely too heavily on this dedication, we should remember it was insufficient to cause the pilot to remain on active duty and may not suffice, alone, to motivate a career in the Reserve.

Balanced against these generally positive motivations one mixed factor appears on the horizon. Recent events surrounding taskings given the Reserve Forces add to the challenge of accomplishing the mission but also increase the time required to remain fully qualified and current, the goal of any pilot. In the airlift community, strategic airlift crews are being faced with additional requirements to attain and maintain proficiency in tactical and low level operations.(5:-; 42:-) Requirements range from initial training and evaluation to periodic currency and check rides. At the present time, this additional aspect of airlift operations has not supplanted any other requirements, but has merely been added to those already mandated. While these operations definitely present a worthwhile challenge as well as an opportunity to engage in a type of flying not offered by the civilian world, the attraction may be offset by the requirement for increased participation. An individual who already volunteers nearly one of every four days may find the additional demands intolerable.

In the area of fighter operations, recent discussions have focused on increased Reserve participation in several arenas. These have included qualification in new tactical systems such as LANTIRN, and increased air defense capabilities while maintaining basic air to ground roles.(24:-; 31:-) Participation in additional exercises and

evaluations such as NATO tactical evaluations has also been on the increase. While the challenges of these taskings can be attractive, the extra time spent in preparation and participation must be recognized.

A brief glimpse of some reserve units current manning situations is perhaps worthwhile at this point. In the 349 Military Airlift Wing at Travis AFB, CA, an associate unit flying the C-141 and C-5, pilot manning is beginning to attract attention. The two C-141 squadrons are having little difficulty in attracting qualified candidates, although the number of applicants has shown a slight decrease over the past year or so. Turnover of mid-career pilots has accelerated somewhat above past levels. Fortunately, the separation rate of pilots from the regular C-141 squadrons is at a high enough rate that vacancies are filled as they occur. The future sees a very large number of senior pilots reaching their twentieth anniversary within the next five years. The incidence of retirement is expected to be high.(12:-; 20:-)

The picture in the two C-5 squadrons at Travis is less optimistic. Neither squadron has a waiting list of currently qualified C-5 pilots. A small number of pilots who have not previously flown the C-5 have expressed an interest in joining the units. Although candidates from active duty who will separate in the near future have indicated a desire

to join the Reserve, civilian career opportunities out of the local area have interfered with similar intentions in the past and may well do so in the future. Manning in one squadron is 100 percent, while the other currently has four vacancies. The fully manned squadron has recently had excellent success with UPT recruiting and training and has five positions manned with pilots who have less than two years experience since UPT graduation. Both squadrons have recently experienced the same high turnover in mid-career pilots that has become evident in the C-141 squadrons. Informal comments from those pilots electing to separate generally indicate they no longer feel a need or have the time available to maintain their reserve affiliation. Both squadrons have an exceedingly high number of senior pilots who could retire within the next five years.(5:-; 42:-)

The 357th Tactical Airlift Squadron, a unit equipped C-130 squadron based at Maxwell AFB, AL, has a somewhat similar manning situation. During the past year, they have noted the beginning of a trend toward pilots electing to separate from the unit prior to completing the necessary service to qualify for retirement. Although they have a list of potential candidates who desire to join the unit, the number of applicants has dropped dramatically from two years ago. At the current time, the unit is short two pilots, a situation that has not been typical in the past.(19:-)

In contrast, the 466th Tactical Fighter Squadron, an F-16 unit at Hill AFB, UT, currently enjoys a very positive pilot manning situation. This unit was the first in AFRES to convert to the F-16 and has flown it for several years. They have experienced very little turnover in pilots, and currently have a lengthy list of qualified applicants who are eager to join the squadron. The lure of flying a front line fighter aircraft apparently is strong enough to attract and retain a stable pilot force.(30:-)

The experiences noted above would seem to substantiate to some degree the arguments put forth earlier in this discussion. Essentially, these are that the general motivations for participation as a reserve pilot no longer have the attraction levels that sustained the high manning statistics characteristic of the past 15 to 20 years. What does this mean for AFRES as it looks to the future?

CHAPTER VII

WHAT CAN WE DO?

The arguments outlined above are not intended to indicate that AFRES is immediately threatened with a crippling shortage of pilots. What they do indicate is an ongoing erosion of the motivations that have drawn Air Force pilots to continue their military careers as reservists in years past. What should be AFRES's response to this situation?

The initial reaction should be a very careful monitoring of the pilot force. Particular attention should be devoted to the turnover rate in pilots, not just the total manning picture. Because the AFRES pilot generally flies fewer hours than his active duty counterpart, the success of the reserve program has hinged, in part, on the vast experience of its pilots. Increased turnover in the pilot force will lead to lowered experience levels and could pose a threat to the overall success of the flying program. Secondly, increased turnover could validate that the motivators discussed above are indeed no longer operative.

Considering the virtual certainty that a large number of pilots will retire in the near future, and the corresponding need for AFRES to attract pilots to replace them, it would seem prudent for the command to explore through some formal means the factors which have drawn its

current pilots to continue their military careers with AFRES. An appropriate means might be a survey of pilots to determine the basis for their initial decision to join the Reserve and, subsequently, to continue their affiliation. If an actual decrease of total manning threatens, more direct efforts will be required.

The first of these must be an active recruiting program versus the generally passive programs of the past. The stability of the pilot force over the preceding 10 to 15 years may very well have led to a lackadaisical attitude on the part of squadron level managers with respect to pilot recruitment and retention. More than once, this author has heard senior AFRES officers refer to the waiting line outside the front gate when discussing potential replacement pilots. It may take an effort on the part of some to realize that the waiting line might no longer exist. Squadrons, and perhaps even higher organizational levels, will need to actively seek out former active duty pilots and provide them with information on the benefits and rewards of reserve service.

The Palace Chase program, which allows active duty members to separate from the regular Air Force and complete their service commitment with a unit of the Air Reserve Component still exists and is a potential source of trained pilots.(36:-) However, the current pilot crisis in the regular Air Force makes the use of this program highly

unlikely at the present time. If an increase in active duty pilot retention above the minimum level required should occur, Palace Chase could aid AFRES in manning its cockpits.

Efforts to increase the attractiveness of a continued career in the reserve could be helpful. In light of the argument that the pilot is an "economic being," actions to increase monetary rewards might prove fruitful. Increases made in flight pay would benefit the AFRES pilot where the current bonus program does not. It is significant to note that the rates of flight pay, or more formally and accurately, Aviation Career Incentive Pay (ACIP), have not been increased since 1981, and in that time the relative value of this entitlement has declined by 27 percent.(15:16)

A further monetary enhancement that is often discussed is the payment of full monthly ACIP to a reserve member who meets all rated requirements. The argument supporting this idea recognizes that AFRES crewmembers meet the same currency and qualification requirements as their regular USAF counterparts, take the same risks and, under the concept of Total Force, bear the same responsibility for the national defense. Some AFRES pilots actually fly more hours than their regular counterparts who are entitled to full monthly ACIP.

Another area of possible enhancement is the current retirement system. The most apparent change would be the

availability of an annuity at an earlier age than 60 years. While this might be reduced over the current amounts in light of the potentially longer payment of benefits, the option of earlier entitlements might prove attractive to some.

Beyond the areas of direct dollar remuneration are possible improvements in the benefits accorded reservists. Increased access to military facilities such as commissaries and exchanges while in the Reserve, as well as at an earlier date after retirement, might prove effective. No doubt other areas exist where improvements could be made that would enhance the attractiveness of reserve service.

Besides these active means of bolstering the pilot force, a passive and temporary solution might be found in increased waivers to overgrade situations if not in realignment of squadron manning authorizations. As noted earlier, some current pilots may well be forced into retirement or reassigned out of the cockpit as they are promoted. Retaining these pilots could alleviate local shortages. However, this is not a long term solution. At some point, replacements must be fed in from the bottom of the system if it is to remain viable. The concept of maintaining manning structures essentially parallel with the active force is valid, but careful management of exceptions could provide temporary relief in extreme situations.

Another step in maintaining the viability and attractiveness of reserve affiliation is the insurance that the demands placed on individuals do not exceed their capabilities. The reference here is not to abilities, but to availabilities. Increased tasking must be realistically evaluated in light of the time a pilot with a civilian career can devote to his second vocation. Senior leaders must realize when the "plate is full" and work to manage the demands made of part-time professionals. In an era of increasing budgetary constraints, delegation of more and more missions formerly flown by the regular Air Force to the Reserve Component is often seen as an easy way to trim costs. However, such is not always the case. A careful balance must be struck between maximizing the utility of the Reserve and requiring increased participation.

With reference to AFRES use of the UPT program to select and train pilots, senior managers must continue to emphasize its importance. It should be remembered that past experience has shown an ability to train well over 100 pilots on an annual basis. Not only can the UPT program be a productive source of pilots, it also allows units to balance the structure of their pilot groups by accessing younger pilots than are typically recruited from active duty separates. This will be accentuated as the increased service commitments following UPT drive up the age of the

pilot leaving active service. Careful selection of candidates for the UPT program can also result in increased loyalties to the unit and AFRES with a corresponding increased length of service.

The high demand in the civil sector for well trained pilots should make reserve pilot training an extremely attractive program. With this in mind, commanders should insure their recruiting and selection processes are refined enough to identify candidates who have a high probability of success in training, as well as a willingness to complete their service commitment following graduation. The latter is perhaps the most difficult quality to ascertain, but is nonetheless extremely important. Most commanders will not force an unwilling pilot to fly, believing the compromise of safety to be too great, therefore, it is imperative commanders select only those candidates whom they are convinced will participate at the required levels for the length of their service commitment and, hopefully, beyond.

It has been the authors experience that a most reliable source of candidates is from within AFRES units themselves. A demonstrated ability to attend scheduled training and perform well in a previous military capacity argues strongly for a productive future association following flying training. It is true that there are potential problems in this area. Enlisted personnel who suddenly

become commissioned officers may face a difficult task in exercising their new responsibilities and, in particular, may have problems in their relationships with former, as well as new found, peers. However, a selection process that recognizes these possible pitfalls, coupled with a commander's involvement in the early stages of the new officer's career, can overcome these difficulties.

Another important point worth repeating is the requirement to maintain the same minimum standards as the regular Air Force in selecting UPT candidates. AFRES must insure its capabilities allow total integration with no additional training if mobilized. While some exceptions in AFRES operations and guidelines are necessary to accommodate the blending of civilian careers and military duties, these should be held to an absolute minimum and be implemented only when absolutely necessary. Compromise at the initial entry level for pilots does not serve this goal. AFRES pilots must meet the same standards as their regular counterparts if the policy of Total Force is to be truly effective.

One other comment with respect to the UPT program is that AFRES should maintain its participation at current levels as a minimum. As noted previously, the UPT graduate helps to balance the force structure. Their presence in an organization also demands the development of additional training skills in more experienced pilots. Continued inputs

to UPT will also force commanders to keep the selection process alive and functioning so that if a surge were needed, it would not be unnecessarily delayed.

A final, but important, point is that the competition for selection to attend UPT can be a valuable motivational tool for commanders if properly administered. All in all, it is an extremely valuable program that can be of great benefit to AFRES in building a stable and effective pilot force.

CHAPTER VIII

CONCLUSIONS

In closing, several points are worthy of repetition. First, there is currently not a manning problem in the total number of AFRES pilots. The force is over 100 percent manned and has a large percentage of highly experienced and qualified pilots. However, the coming "hump" in retirements and/or reassessments means that in the next five to ten years there will be a need to replace the large numbers of pilots who will leave AFRES cockpits. Current accessions of the near record numbers of separating pilots from the active force might appear to provide the solution to this problem. However, forces at work in the pilot marketplace that have not existed over the preceding 10 to 20 years may well make the tasks of recruiting and retaining pilots more difficult. Although, in the past, many pilots have elected to continue their military careers through participation as an AFRES pilot, it is not unreasonable to expect the attractions that adversely affect the regular Air Force in retaining pilots might have the same impact on AFRES as long as the lure of an airline career remains as strong as it is presently.

Careful attention by those charged with recruiting and retaining the AFRES pilot force can forestall any negative implications these trends might have. AFRES must realize it is a competitor for the trained Air Force pilot

and act accordingly. Looking to the future and taking active measures now can prevent a compromise of AFRES's ability to fulfill its commitment to the preservation of national security in the future.

LIST OF REFERENCES

1. Assignments Within the Reserve Components. Air Force Regulation 35-41, Vol. 1. Washington D.C.: Department of the Air Force, 30 November 1988.
2. Beard, Harry L., Captain, USAF. "A Pilot Looks at the Pilot Shortage in the Air Force Reserve." Maxwell AFB, AL: Air Command and Staff College, June 1965.
3. Bonneau, Bertrand, and Norris, Guy. "Is there a pilot for this aircraft?" Interavia (July 1988), p. 649.
4. Burlage, John. "DOD backs bonuses for pilots." Air Force Times. December 12, 1988, p. 3.
5. Bradford, Harry P., Major, USAFR. Operations Officer, 312th Military Airlift Squadron, Travis AFB, CA. Interview with the author. 6 March 1989.
6. Canan, James W. "Tough Choices For Hard Times." Air Force Magazine Vol 72 (February 1989), pp. 48-55.
7. Cook, D. Reserve Components of the United States Armed Forces. Washington, D.C: Office of the Assistant Secretary of Defense (Reserve Affairs). March 1988.
8. Cromer, DeJuan, Captain, USAF and Julicher, Mark R., Captain, USAF. "An Examination of the Effects of Economic Conditions on Pilot Retention." Unpublished master's thesis, Air Force Institute of Technology (AU), Wright-Patterson AFB, Ohio, September 1982.
9. Department of Defense Manpower Requirement Report FY 1989. Prepared by the Office of the Assistant Secretary of Defense (Force Management and Personnel), Office of the Assistant Secretary of Defense (Reserve Affairs), Department of the Army, Department of the Navy, Department of the Air Force, and Defense Agencies. Washington, D.C.
10. Desilets, Jeffery, Lt Col, USAF. DOT, Headquarters, Air Force Reserve. Robins AFB, GA. Interview with the author. 30 March 1989.
11. Flying Training. Air Force Reserve Regulation 51-4. Robins AFB, GA: Headquarters, Air Force Reserve, 9 January 1987.

12. Geisler, Thomas M., Major, USAFR. Operations Officer, 708th Military Airlift Squadron, Travis AFB, CA. Interview with the author. 6 March 1989.
13. Gilstad, Claire J. Lt Col, USAFR. Personnel, Programs, Training, Systems and Analysis, Office of Air Force Reserve. Washington D.C. Interview with the author and data provided from AFRES Personnel Data System. 26 January 1989.
14. Ginovsky, John. "Pilot bonus no cure-all DOD says." Air Force Times, January 2, 1989, p. 6.
15. -----. "Special Report--Pilot Retention, The Report." Air Force Times. December 19, 1988, pp. 14-16.
16. -----. "Special Report--Pilot Retention, The Bonus." Air Force Times. December 19, 1988, pp. 15-16.
17. -----. "Worldwide." Air Force Times. December 19, 1988, pp. 14-15.
18. Gordon, Sol, Lt. Col., USAF(Ret), ed. 1987-Reserve Forces Almanac. Washington, D.C.: Uniformed Services Almanac, Inc. 1987.
19. Hegler, Freddy M., Major, USAFR. Operations Officer, 357th Tactical Airlift Squadron, Maxwell AFB, AL. Interview with the author. 7 March 1989.
20. Henthorn, David E., Major, USAFR. Operations Officer, 710th Military Airlift Squadron, Travis AFB, CA. Interview with the author. 6 March 1989.
21. Hill, Jim D. The Minute Man in Peace and War. Harrisburg, PA: The Stackpole Company, 1964.
22. History of the Air Force Reserve (AFRES). January-December, Yrs. 1970 to 1988 Vol I. (Separate edition each year.) Robins AFB, GA: Directorate of Historical Services, Headquarters, Air Force Reserve.
23. Hughes, David. "Four-Year Pilot Hiring Boom Creates Problems for Carriers." Aviation Week & Space Technology Vol. 127 (October 5, 1987), pp. 95-97.
24. Jackson, Terry V., Major, USAF. Chief, Fighter Requirements, Requirements and Development Office, Office of the Air Force Reserve, Washington D.C. Interview with the author. 13 March 1989.

25. Jaye, Vince. "Airlines turn attention to civilian-trained pilots." The Montgomery Advertiser and The Alabama Journal. March 18, 1989, pp. 1-2.
26. Johnson, Jalmer D. "Pilot Pay Under Deregulation." Air Line Pilot Vol 56 (September 1987), pp. 43-46.
27. Kuhn, Phillip G., Colonel, USAFR. "A Pilot Training Program for the Air Force Reserve." Maxwell AFB, AL: Air War College, 1969.
28. Lavender, Paul W., Lt. Col., USAFR. Chief, Airlift and Readiness Section, Operations, Readiness and Plans Division, Office of Air Force Reserve. Washington D.C. Interview with the author. 12 January 1989.
29. "Low Wages Cited in Investigation of Airline Manpower Shortage." Aviation Week & Space Technology Vol 81 (July 13, 1964), p. 32.
30. Macuet, Mike L., Major, USAFR. Air Reserve Technician, 466th Tactical Fighter Squadron, Hill AFB, Utah. Interview with the author. 14 March 1989.
31. Nelson, Wayne N., Colonel, USAFR, Air Force Reserve Advisor to the Commander, Air University. Interview with the author. Maxwell AFB, AL. 7 November 1988.
32. North, David M. "Navy, USAF Raise Service Obligations To Stem Exodus of Pilots to Airlines." Aviation Week & Space Technology Vol. 127 (October 5, 1987), pp. 93-95.
33. Proctor, Paul. "Projected Commercial Pilot Shortage Spurs Ab Initio Training Development." Aviation Week & Space Technology Vol. 128 (June 13, 1988), pp. 121-125.
34. Purpose, Policy, and Responsibilities for Air National Guard and Air Force Reserve. Air Force Regulation 45-1. Washington, D.C.: Department of the Air Force, 2 January 1987.
35. Reserve Component Programs--Fiscal Year 1987. Annual Report of the Reserve Forces Policy Board. Office of the Secretary of Defense. Washington D.C. 1987.
36. Reserve Forces Personnel Procurement-Palace Chase. Air Force Regulation 35-46. Washington D.C.: Department of the Air Force, 1 May 1988.

37. Scheer, Roger P., Maj. Gen., USAFR. "Combat Status Increases Pride." The Officer Vol. LXV (February 1989), pp. 61-69.
38. Shifrin, Carole A. "American Meets Pilot, Fleet Increase With Computer-Intensive Instruction." Aviation Week & Space Technology Vol 123 (June 13, 1988), pp. 139-141.
39. "U.S. Military Facing Pilot Shortage As Commercial Industry Expands." Aviation Week & Space Technology Vol. 128 (June 13, 1988), pp. 109-110.
40. "Wanted: A lot of good pilots." U.S. News & World Report Vol 103 (November 9, 1987), pp. 83-84.
41. Whisker, James B. The Citizen Soldier and United States Military Policy. North River Press, Inc., 1979.
42. Whitehouse, Robert E., Lt. Col., USAFR, Commander, 301st Military Airlift Squadron, Travis AFB, CA.
Interview with the author. 6 March 1989.